

ABSTRACT

Disclosed are thin hard pellicle for projection photolithography and process for making the same. The thin hard pellicle comprises a pellicle layer having a thickness in the range  
5 of about 5 to 120  $\mu\text{m}$  and a mount frame attached to the peripheral area of a surface of the pellicle layer. The pellicle layer can consist essentially of a material selected from silica, fluorine doped silica, aluminum doped silica, methylated silica, fluorinated and methylated silica, fluorinated aluminum doped silica,  $\text{CaF}_2$ ,  $\text{MgF}_2$ ,  $\text{BaF}_2$  and  $\text{SiC}$ . The mount frame is preferred to have substantially the same CTE of the pellicle layer to  
10 minimize stress caused by temperature change. The process for making the hard pellicle involves ion implantation of a silicon wafer, deposition of the pellicle layer on the silicon wafer, mounting the frame to the pellicle layer and the separation of the pellicle from the wafer by heat treatment.